

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the reasons that follow.

The present invention relates to improving the overall efficiencies of various aspects of a wood fiber pulping process by removing all or a portion of high molecular weight organic by-products from washing fluids to increase concentration gradients for mass transfer.

In one aspect the present invention relates to a method for improving the efficiency of a wood pulping process using a displacement batch digester that uses untreated pulp washing fluid to displace hot black liquor from the digester to an accumulator. In this aspect the untreated pulp washing fluid is subjected to removal of high molecular weight organic by-products from the washing fluid prior to the washing fluid being used to displace the hot black liquor (Claim 18).

In a second aspect the present invention is a method for improving the efficiency of a wood pulping process incorporating dilution of pulp by removing high molecular weight by-products from a filtrate taken from any brownstock (not bleach plant) washing plant step of the process and using the treated filtrate in any dilution zone, pipe or equipment in the pulping process to dilute the pulp (Claim 21).

Another aspect of the present invention is a method for improving the efficiency of wood pulping process employing a multi-stage washing process wherein a washing liquid is separated from the wash fibers in one of a last stage or any stage except the first stage of the multi-stage washing process, the separated washing fluid being treated to remove high molecular weight organic by-products to produce a washing liquid having a reduced quantity of high molecular weight organic by-products so that the cleaned or treated washing liquid can be used in any other stage of the multi-stage washing process (Claim 22).

In yet another aspect of the present invention is a method for improving the efficiency of a wood pulping process using an oxygen delignification stage which is proceeded by and followed by washing of the pulp by separating washing fluid from the pulp after any one of the washing steps proceeding or any one of the washing step following the oxygen delignification step and separating high molecular weight organic by-products from the washing fluid to produce a cleaned washing fluid with increased concentration gradients for mass transfer and

using the cleaned washing fluid in any one of any washing operation or to dilute pulp prior to, after, or during oxygen delignification (Claim 23).

The Examiner has rejected claims 18 and 21-27 under 35 U.S.C. 103(a) as unpatentable over Fremont (US Pat. No. 4,226,673) in view of Fremont (US Pat. No. 3,758,405).

The basic purpose of the Fremont inventions is to clean pulp and paper mill effluents to decrease the pollution load to streams and other discharge bodies of waters. The pollution load specifically addressed is the color of the effluent which rises from the chromophoric organic compounds. Patentee uses the method of filtration/ultrafiltration. The '405 patent, discusses this in general. The '673 patent uses the same concept and in fact some of the same wording but is to identify a membrane that will work in the field without modifying the temperature and pH of the effluent. The main reasons for '673 process was to remove the constraint of modifying the temperature and pH required for the older type of membranes available at the time of the process the '405 was developed.

Fremont '405 is explicitly drawn to water treatment of the effluents before discharging into bodies of water (i.e., pollution point source load). At column 1, 30-35 Patentee states the effluent to be treated is "...high in biological oxygen demand (BOD) and in color..." thus indicating that Patentee was not concerned with or motivated to remove high-molecular weight byproducts (HMW) from a pulping processes to make the kinetic and diffusional characteristics more appropriate for the pulping processes when reused. In fact, Patentee clearly states it is the intent of his process to dispose of the inorganic portions of the fluid being filtered instead of being reused as taught by application in order to improve the overall efficiency of the process. In column 1, line 63-66 Patentee states "...large amount of concentrate will be formed which contains a great deal of the salts present in the water making it difficult to dispose of the concentrate." and again in column 2, 1-4 "...and its high inorganic solids concentration makes it expensive to dispose of the concentrate as by incineration."

Further, Patentee states in column 2, 14-24 "...adjusting the pH [sic] said effluents to from about neutrality to about 9, subjecting the effluents to ultrafiltration to form an aqueous permeate and a retentate containing substantially all of the color bodies in said effluents...to oxidize the color bodies to colorless inorganic salts..." which clearly indicates the purpose of Patentee's process was to remove color by changing the organic retentate chromophores with

heating or burning (oxidation) and not to reuse the effluent with HMW removed to make the downstream or upstream pulping processes more efficient which is the thrust of Applicant's invention. Applicant's invention is to increase the mass transfer of the HMW from dirty pulp and reuse the existing inorganic compounds to maintain or enhance the proper chemical atmosphere for further treatment.

In the '405 patent, Patentee is clearly referring to bleach plant effluent and not brown stock plant effluent since in column 2, 14-16 it is stated "adjusting the pH said effluents to from about neutrality to about 9..." because the pH of bleach plant extraction stage effluent is about neutrality but the extraction stage in the brown stock area is approximately 11 and can be higher.

Patentee's process and apparatus are to remove color. Patentee never teaches or suggests using the permeate for enhancing the pulping process, rather his concern was only to remove the organic chromophores for destruction so the permeate can be released into the environment.

The '673 patent as stated by Patentee in column 2, 14-15 "...particular importance is the fact that no pretreatment of the decker effluent is required prior to ultrafiltration," thus indicated that Patentee was concerned with a new membrane he found in the marketplace that does not require temperature and pH adjustment of the feed stock to the filtering mechanism since at the time of the '405 patent the available membranes were very restrictive in their operating environment. In fact, in column 2, 12-13 Patentee states that this patent is to use the new type of membrane in the context of the process and teaching of the '405 patent.

The thrust of the '673 patent teaching is reducing the point source pollution load into streams. For example, in column 2, 58-63 Patentee states "It will be understood that the ultrafiltration will also remove other high molecular weight organic materials from the effluent and this is advantageous in that it will further lower the BOD of the permeate when it is discharged into a stream, river, lake or the like" which indicates that he did have in his possession the process of removing the HMW so that the permeate can be reused to enhance the pulping processes. Patentee was only concerned with removal of the color and other BOD in the permeate discharged into the streams, etc.

On page 2 of the Office action, the examiner refers to column 1, 63 to column 2 and column 2, 49-62 of the '673 patent as evidence that the Patentee was filtering filtrate streams.

However, in these references Patentee suggests that the purpose of the invention is to create a cleaner permeate to be discharged into a stream or other body of water.

To stretch the teaching of the reference beyond color removal from an effluent for eventual discharge into streams, etc. is to use Applicant's teaching to interpret the reference. Applicant does not care about color, Applicant is only concerned with ways to increase the diffusional/chemical efficiencies of the reused filtered effluent (permeate).

In the final paragraph on page 3, the Examiner states that the motivation of reducing the discharge of large amounts of waste water from pulp mill operations is Applicant's goal. This is not Applicant's teaching. The thrust of Applicant's processes are to increase the mass transfer in the specific places Applicant would use the permeate. The Examiner states that the effluent streams can be done (treated) in their natural state has nothing to do with Applicant's process.

It is submitted the Examiner appears to be picking words out of context and does not understand the purpose of '405 and '683 patents. It appears the Examiner believes Applicant's processes are to decrease pollution which they are not.

Applicant respectfully submits the Examiner has used his teaching to not only select, but to interpret the prior art. This is clearly contrary to existing Patent Law.

Applicant submits the rejection of Claims 18 and 21-27 under 35 U.S.C. 103(a) is not well taken and should be withdrawn.

In view of the foregoing it is respectfully submitted that the present application is now in condition for allowance and a notice to that effect is earnestly solicited.

The Examiner is invited to contact the undersigned by telephone if a telephone interview would advance prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No.50-3841. If proper payment is not enclosed herewith, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-3841. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-3841.

Respectfully submitted,

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